REMARKS

Claims 2 through 5, 7 through 10, 12 through 14 and 16 through 18 remain pending in this application. In response to the Office Action, dated December 2, 2004, claims 3, 4, 8, 9, 13 and 17 have been amended and a Request for Continued Examination has been filed. No new matter has been added. A petition for a two month extension of the period for response to the Office Action, and appropriate fee charge authorization, are filed herewith. The arguments submitted in the Remarks of the Amendment filed June 9, 2004 are maintained and incorporated herein. In addition, new arguments are submitted below. Favorable consideration of the arguments is respectfully solicited.

Claims 1 through 18 were rejected under 35 U.S.C. § 103 as being unpatentable over Roberts, of record, in view of Krimmel, of record. The grounds for, and explanation of, the rejection is essentially the same as that presented in the earlier Office Action of April 6, 2004. The Office Action has not acknowledged that claims 1, 6, 11 and 15 were cancelled by the June 29 Amendment. It is not apparent that that Amendment had received full consideration. The only independent claims pending are claims 2, 7, 12 and 16. Claim 2 is reproduced as follows:

> 2. An optical transmitter comprising:
>
> a modulation signal source for outputting modulation signals of a predetermined frequency;
>
> a semiconductor laser source driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals;
>
> an optical amplifier for amplifying the laser light from said semiconductor laser source, wherein a *ratio* of an amplitude modulation depth of amplified laser light outputted from the optical amplifier, to an amplitude modulation depth of the laser light inputted into said optical amplifier, *is set* in the range of 60% or less (emphasis supplied);

> a signal source for outputting signals to be transmitted, in the form of an electric signal; and
>
> an external modulator which is provided on a transmission line between said semiconductor laser source and said optical amplifier, which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

In consideration of the Office Action commentary, the following description of the claimed invention is made to avoid any misunderstanding of the claimed "optical amplifier." It is well-known that the expansion of the spectral width of laser light makes it possible to suppress the occurrence of SBS (Stimulated Brillouin Scattering) (see page 4, lines 22-23). On the other hand, when the maximum optical power of signal light exceeds a threshold, the signal light after propagation through a long-haul optical transmission line will demonstrate degradation of the waveform due to the non-linear optical phenomena (see page 5, lines 15 through page 6, line 2).

As described on page 14, lines 8 through page 15, line 1, in the present invention, the semiconductor laser source 12 is modulated by the modulation signal source 11 (direct-modulation), and thereby the semiconductor laser source 12 outputs the laser light, phase-modulated or frequency-modulated, and also amplitude-modulated. The optical amplifier 13 functions so as to remove a low-frequency component in the light inputted, and thereby a modulation depth of the amplitude-modulation of the light outputted becomes small. That is, the light outputted from the optical amplifier 13 advantageously suppresses the occurrence of SBS due to the expansion of the spectral width, and the optical amplifier 13 can prevent the occurrence of the non-linear optical phenomena without exceeding the maximum power of signal light.

Independent claims 2 and 7 require that a *ratio* of an amplitude modulation depth of amplified laser light outputted from the optical amplifier, to an amplitude modulation depth of the laser light inputted into said optical amplifier, *is set* in the range of 60% or less. The Office Action discussion at page 3, lines 13 to 20, is based on the premise of adjusting solely the modulation depth itself in the range of 60% or less. However, the claims define the ratio between the amplitude modulation depths of laser light imputted into and outputted from the optical amplifier. Setting of solely a modulation depth of the output of the optical amplifier is technically and significantly different from setting the modulation depth ratio between the input and output of the optical amplifier. When decreasing the modulation depth of the output of the semiconductor laser without regard to the ratio, a chirp decreases accordingly and becomes small. Thus, the SBS suppression effect decreases. In contrast, when decreasing the modulation depth by the optical amplifier in accordance with the claims, there is no decrease in effect of SBS suppression because the expansion of the spectral width by chirp is significantly changed.

On page 8, lines 10-17 of the Office Action, the Examiner seems to think that the optical amplifier merely amplifies the optical signal if the modulation depth is adjusted in similar to Roberts. This understanding is incorrect. As described in the term (2), in order to make the modulation depth small while expanding on the spectral width, it is necessary to use an optical amplifier. Furthermore, on page 8, line 17 through page 9, line 2 of the Office Action, the Examiner's indication is incorrect. Because, the specification explains the relationship between the modulation frequency of signal light and the gain coefficient of the optical amplifier, and Fig. 12 shows that the modulation depth residue changes in accordance with the modulation frequency of the basis of this relationship.

Independent claims 12 and 16 requires control of modulation depth. The Office Action, at the paragraph bridging pages 8 and 9, disregards these claim requirements by asserting that the present disclosure has no structure to show that the optical amplifier adjusts depth modulation. This assertion, as well as the conclusion that the optical amplifier merely amplifies the optical signal, are incorrect. The specification explains the relationship between the modulation frequency of signal light and the gain coefficient of the optical amplifier. Fig. 12 shows that the modulation depth residue changes in accordance with the modulation frequency on the basis of this relationship. In order to make the modulation depth small while expanding the spectral width, it is necessary to use the claimed optical amplifier. Adjustment of the modulation depth in the Roberts device does not produce these results.

Claimed features have been identified above that distinguish from the Roberts disclosure. The Krimmel reference does not overcome these deficiencies in Roberts, nor has it been relied upon for such teachings. Accordingly, withdrawal of the rejection and allowance of the application are respectfully solicited. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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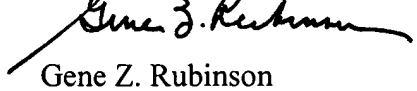

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